GUIDELINE E.02– Generator Sub-Base Fuel Storage Tanks

E.02.1 PURPOSE

The purpose of this guide is to assist with the permitting and installation of aboveground fuel storage tanks for use with electrical generators.

The primary safety concerns for aboveground fuel storage tanks are ensuring that the entire system is liquid tight and that the storage tank is properly constructed in accordance with recognized national standards. The violations most commonly identified are aboveground fuel storage tanks that are not equipped with proper emergency venting or the aboveground fuel storage tank is not listed by a recognized testing agency.

This guideline details the requirements for aboveground storage tanks in accordance with Articles 79 & 80 of the Fire Code.

E.02.2 SCOPE

This guideline shall apply to the installation of all electrical generator sub-base fuel storage tanks.

E.02.3 PROCEDURE

PLAN SUBMITTAL AND PERMITS

Installation plans shall be submitted to the Building department for review. The plans shall include the design, details, and specifications of the following:

- Quantities and types of liquids to be stored
- Distances from tanks and dispensers to property lines, buildings, and other exposures
- Vehicle access
- Fire appliance
- Vehicle impact protection
- Protected tanks and their supports
- Method of storage and dispensing
- Overfill prevention, spill containment, vents, vapor recovery dispensers, and other equipment and accessories

PLAN SUBMITTAL AND PERMITS (Cont.)

- Seismic design in accordance with the Building Code
- Secondary containment
- Venting
- Piping
- Electrical systems
- Emergency controls
- All listing data
- Other information as required by the Fire Prevention Division

TANK DESIGN

Aboveground tanks shall be listed and shall meet the requirements of UFC Standard 79-7.

SEPARATION DISTANCES

Tank Capacity (gallons)	**MINIMUM DISTANCE FROM PROPERTY LINE OF PROPERTY WHICH IS OR CAN BE BUILT UPON,INCLUDING THE OPPOSITE SIDE OF A PUBLIC WAY (feet)**	**MINIMUM DISTANCE FROM NEAREST SIDE OF ANY PUBLIC WAY OR FROM NEAREST IMPORTANT BUILDING ON THE SAME PROPERTY (feet)**
750 or less	5	5
751 to 12000	7 ½	5

TOTAL QUANTITY

Primary tanks of protected aboveground tanks shall not exceed a 12,000-gallon individual or 48,000 –gallon aggregate capacity. Tank installations having the maximum allowable aggregate capacity shall be separated from other installations of protected aboveground tanks by not less than 100 feet.

NORMAL AND EMERGENCY VENTING

Normal vent pipe outlets shall be located such that vapors are released at a safe point outside of the building and not less than 12 feet above the adjacent ground level. Vent outlets shall be located so that flammable vapors will not be trapped by eaves or other obstructions and shall be at least 5 feet from building openings or property lines of properties that can be built upon.

Additional emergency venting that will relieve excessive internal pressure caused by exposure fires is required for the primary tank and the interstitial space between the primary and secondary containment tank. Do not alter emergency vents unless approved by manufacturer.

SECONDARY CONTAINMENT

Aboveground tanks shall be provided with drainage control or diking in accordance with Fire Code Sections 7901.8 and 7902.2.8 or with secondary containment that is a component of the listed protected or multi-hazard tank system. Secondary containment systems shall be monitored either visually or automatically. Enclosed secondary containment systems shall be provided with emergency venting.

FLAME ARRESTORS

Approved flame arrestors or pressure vacuum breather valves shall be installed in normal vents.

VEHICLE IMPACT PROTECTION

Guard posts or other approved barrier protection shall be provided to protect the tank from vehicle impact. Guard posts, if used, shall be installed according to the following specifications:

1. The posts shall be steel pipe not less than 4 inches in diameter and concrete filled.
2. The posts shall be spaced a minimum of 4 feet apart.
3. The posts shall be set not less than 3 feet deep in a concrete footing not less than 15 inches in diameter.
4. The top of the posts shall not be less than 3 feet above the grade upon which the tank sits.
5. The posts shall not be located less than 5 feet from the tank.

OVERFILL PREVENTION

Aboveground tanks shall not be filled in excess of 90 percent of their capacity. An overfill prevention system shall be provided for each tank. During tank filling operation, the system shall:

- Provide an independent means of notifying the person filling the tank that the fluid level has reached 85 percent of tank capacity by providing an audible or visual alarm signal. The tank shall also be provided with a tank level gauge marked at 85% of the tank capacity.
- Automatically shut off the flow of fuel to the tank when the quantity of liquid in the tank reaches 90 percent of tank capacity. For rigid hose fuel-delivery systems, an approved means shall be provided to empty the fill hose into the tank after the automatic shutoff device is activated.
- A permanent sign shall be provided at the fill point for the tank documenting the filling procedure and the tank calibration chart. The filling procedure shall require the person filling the tank to determine the number of gallons required to fill it to 90 percent of capacity before commencing the fill operation.

FILL PIPE CONECTIONS

The fill pipe shall be provided with a means for making a direct connection to the tank vehicle's fuel-delivery hose so that the delivery of fuel is not exposed to the open air during the filling operation. When any portion of the fill pipe extends below the level of the top of the tank, a check valve shall be installed in the fill pipe at a point not more than 12 inches from the fill hose connection.

SPILL CONTAINERS

A spill container having a capacity of not less than 5 gallons (18.9 L) shall be provided for each fill connection. For tanks with a top fill connection, spill containers shall be noncombustible and shall be fixed to the tank and equipped with a manual drain valve which drains into the primary tank. For tanks with a remote fill connection, a portable spill container shall be provided.

SIGNS

Warning and identification signs shall be installed to clearly identify hazards. The design of such signs shall be in accordance with the Fire Code. Conspicuous signs prohibiting simultaneous tank filling and fuel dispensing shall also be posted.

Diesel fuel is classified as a Class II Combustible Liquid. Diesel fuel has the following NFPA 704 hazard ratings: Health: 1, Flammability: 2, Reactivity: 0 and Special Hazards: None (leave blank).

TANK OPENINGS

Tank openings in aboveground tanks shall be through the top only.

ANTI-SIPHON DEVICES

Approved anti-siphon devices shall be installed in each external pipe connected to the tank when the pipe extends below the level of the top of the tank.

OPERATING PERMIT AND HAZARDOUS MATERIALS DISCLOSURE

An annual Fire Department permit is required to install, operate, repair or modify aboveground tanks used for storage and dispensing of flammable or combustible liquid motor fuels. All Fire Code permits are issued after the installation is completed in accordance with the approved plans and specifications. Prior to issuance of the Fire Department's permit, all other applicable permits shall be obtained and finalized, if applicable (i.e., Building, Planning, and South Coast Air Quality).

A hazardous materials disclosure must be filed annually with the fire department for the storage of 55 gallons or more of fuel. Hazardous materials disclosure forms are available on the Newport Beach Fire Department website:

http://www.city.newport-beach.ca.us/FMD/default.htm